



PACIA submission

To the Eastern Australian Domestic Gas Market Study

7 February, 2014

Overview and context

PACIA has been pleased to provide input to the development of the Department's Eastern Australian Domestic Gas Market Study (the Study). PACIA's delegation of members and its submission in October, 2013 follow several discussions with the Department on key issues and options for optimizing and improving Australia's use of gas.

The Study itself is a welcome reckoning and analysis of the complexities facing a major market in expansion. It is beneficial in explaining the range of interconnected elements that comprise the market, the need for policy reform and development to deal with the impacts of LNG growth, the principles that need to be applied to policy reform and recommendations for policy change to meet a suite of agreed objectives. It provides a structured approach for PACIA to identify those areas it feels more information is required for a balanced approach to policy reform.

Given the information and inputs that PACIA has already provided, this submission will primarily address new information raised in the report and flesh out areas it feels require more detail to meet the stated policy objectives. These are in three main areas of:

1. Ensuring gas is able to be used to expand and grow broader Australian manufacturing to meet domestic and export market growth as well as expanding the Australian energy sector to meet domestic and market growth.
2. Ensuring chemical feedstock requirements are fully understood and accounted for in policy reform development to prevent unintended consequences from energy calibrated policy considerations
3. Ensuring the policy reform process takes into account previously identified and agreed government recommendations.

From PACIA's perspective, Australia has an obligation to ensure the noted "golden age of gas" include it's capacity to enable and underpin significant development of the broader Australian economy. This can and should be a good news story.

The good news is Australia has significant gas reserves that can be applied for expanding the energy sector and its growth and export potential as well as expanding the manufacturing sector and its growth and export potential. The good news is Australia has mature, innovative energy and manufacturing sectors able to make best use of this gas throughout the economy. The good news is Australia has a mature and innovate chemicals and plastics sector, the second largest manufacturing sector in the economy, which currently enables and underpins 109 of the country's 111 industries¹ – including oil and gas, and manufacturing. The good news is there is increasing global and local demand for products and services as a result of increasing population, education and wealth. An example of this is the projected need to significantly increase food production by to

¹ *Elements in Everything, current profile and future trends for the Australian chemicals and plastics sector*, page 3, CSIRO, March, 2013

meet current and future demand. The good news is that globally the chemicals and plastics sector will enable industries to meet this demand.

The opportunity then is for the Australian economy to make the best use of our natural endowment and these favourable circumstances, and be an active and profitable participant in meeting this increased demand. The good news is that the Department and PACIA have co-funded CSIRO to examine the critical role of the Australian chemicals and plastics industry, the megatrends likely to influence its future and have compiled a set of strategic directions with actions that industry and governments can take for economy wide benefit. The good news is that PACIA has subsequently developed a Strategic Industry Roadmap.² This takes a structured and prioritized approach for industry and government to use these actions in addressing the current industry contraction and its implications and encourage and support a trajectory of sustainable economic growth.

Access to natural gas is one of the three urgent, short term fundamental areas for action, alongside regulatory reform and ensuring Australia is an attractive investment destination for globally competitive capital.

The gas issue has two aspects important for the sector. The primary aspect is its use as a chemical feedstock, the secondary is its process energy value. Both are effectively inseparable in a chemical plant, but have different considerations where policy reform is concerned. The use of gas as a feedstock and its specific needs is a focus of this submission.

² *'Adding value, the critical, enabling role of the chemicals and plastics industry for Australia's' future'*, PACIA, June 2013
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PACIA issues and recommendations.

As noted, the Study provides a structured view of the gas market and its participants, the changes occurring with the rapid increases in LNG export and the types of impacts this is likely to have on current users as well as policy reform principles and recommendations. There are three important areas where PACIA feels gaps exist that require additional information to meet the Study's stated policy objectives of "...promoting efficient gas markets in the long term interests of consumers in accordance with the National Gas Objective (which covers residential, commercial and industrial users, including making LNG)³. PACIA is pleased to provide additional information here to help fill those gaps and complement the work to date of the study and its objectives.

1. Ensuring gas is able to be used to expand and grow broader Australian manufacturing to meet domestic and export market growth as well as expanding the Australian energy sector to meet domestic and export market growth.

The content of the Study considers the LNG industry broadly, but appears either silent or too narrow in its understanding of the broader and indeed current uses and users of gas, their current economic contribution as well as their growth potential and value. It is important that all of the current and future value of gas combine to paint a complementary and balanced picture of Australia's need for gas now and the future to best inform the optimum policy settings required.

An example of this is in the Introduction section on page 11. A good explanation is provided of the increased LNG export volumes and BREE's calculation of the expected export income – its value to the economy. However the Demand section commencing page 37, while explaining the various industrial uses of gas is silent on both their current economic value or growth potential. The government has a structured manufacturing agenda including a vision for the development of Northern Australia⁴. An expanded domestic manufacturing sector, enabled by the chemicals and plastics industry, is key to delivering the necessities including fertilizers, irrigation, pesticides, fuels, cleaners and disinfectants, preservatives, packaging and refrigeration to achieve this policy objective.

In fact the opposite is assumed by the Core Energy modelling projections on page 81, para 2: "Domestic demand was projected to fall from 705 PJ in 2012 to a low point of 575 PJ in 2018, due to a reduction in gas-powered generation demand (235 to 140 PJ) and industrial demand (293 to 260 PJ)."

Section 3.2, Industrial Gas Demand on page 39 provides a good reckoning of current industrial demand and its composition. However it is silent on the potential for gas to underpin significant non-LNG based export business growth. The development of world-scale chemical manufacturing facilities to meet local and export demand is a reality in other gas rich nations. Importantly, these have the potential to significantly add-value to

³ The Study, page 95, Table 7.2 -Purpose

⁴ 'The Coalition's 2030 Vision for Developing Northern Australia', June, 2013

the raw gas, with economic and social multipliers and benefits derived from factors such as innovation, employment and an increased tax revenue base. At a point in time where elements of post mining boom economics is commencing, the reality of adding value to raw gas through chemistry to the economy should be vigorously explored.

The Department will be aware of Australian businesses with an interest in the development of world scale, integrated chemical manufacturing plants and there may be examples from other sectors where business growth from gas availability is achievable. With the existence of Australian gas reserves, the capability for both energy exports and value-added manufactured exports should be taken into greater consideration.

Recommendation: Gas policy reform and the development of the proposed Eastern Australia Gas Supply Strategy to 2020 needs to take all uses of gas into consideration including their economic growth potential.

2. Ensuring chemical feedstock requirements are fully understood and accounted for in policy reform development to prevent unintended consequences from energy calibrated considerations

Gas use for chemical feedstock still remains a lesser known and understood component of the Australian gas market. Section 3.2 on Industrial Gas Demand on page 39 makes a welcome, valuable, initial reckoning of the chemicals and polymers sector consuming 29% of East Coast demand. It further notes on page 40 the major gas use categories which includes feedstock use and its gas dependence characteristics.

PACIA conducted an industry survey of the gas use for chemical feedstocks in October 2013. Note that these are aggregated figure for national use, rather than East Coast for commercial in confidence reasons. The principles and East Coast quantum remain relevant. The aggregated use has been calculated as:

Feedstock PJ	Process PJ	Total PJ
110	20	130

As noted earlier the feedstock and process amounts are inseparable in a chemical plant. Based on the BREE national figures published in October 2013:

- 130 PJ accounts for 9.7% of the 1,335 PJ domestically consumed in 2011/12
- 130 PJ accounts for 30.4% of the 427 PJ domestically consumed by the manufacturing sector (the largest user in the economy itself)

The raw gas used as feedstock is value- added into a range of C1 and C2 products used throughout the country’s supply chains and economy as the following table illustrates. In addition to the applications from the two chemical streams, the table also notes the Megatrends and growth markets identified by CSIRO as an example of their capacity to enable broader economic growth.

Current Australian chemical production from natural gas feedstock

C1: Ammonia / ammonium Nitrate	Applications	Megatrends and growth markets
	Fertilisers to increase agricultural yields	Food for all: <i>Agriculture and food</i>
	Refrigeration, supply chain storage	Food for all: <i>Agriculture and food</i>
	Explosives	Resource scarcity: <i>Mining</i>
	Carbon dioxide, soft drinks / medical	Food for all: <i>Agri and food, Healthcare and wellbeing</i>
C1: Sodium cyanide	Gold extraction and processing	Resource scarcity: <i>Mining</i>
C1: Methanol	Building products: MDF, particle board	Emerging markets: <i>Building and construction</i>
	Agri chemicals	Food for all: <i>Agriculture and food</i>
	Water treatment: waste water, sewerage	Emerging markets
	Fuels: biodiesel, GEM transport, fuel cells	Emerging markets
C2: Polyethylene	Applications	Megatrends and growth markets
	Agricultural piping, irrigation, tanks	Food for all: <i>Agriculture and food</i>
	Agricultural film: silage, grain bunkers	Food for all: <i>Agriculture and food</i>
	Packaging: bag and film; rigid containers; transport film and wrap	Food for all: <i>Agriculture and food</i>
	Industrial, mining, commercial, residential piping for water, gas and other reticulation	Emerging markets, Resource scarcity: <i>Mining; building and construction, Mining</i>

It should be noted that feedstock consumption is utilized by a small number of chemical companies. The ABS reported 5,557 chemicals and plastics companies operating in Australia in 2010/11⁵. A fair proportion of these will consume an additional amount of gas for electricity, heat and steam and ancillary purposes, although the amount is not known.

⁵ 'Elements in Everything', CSIRO, March 2013

In addition to these current uses in Australia, large, integrated chemical plants produce a much broader range of intermediate and final products from natural gas. These have the capability to expand the higher value-adding to raw natural gas for both intermediate and finished products in markets such as high technology fibres, agriculture, coatings and pharmaceuticals. Several sections of the Study provide useful insights to feedstock use and its challenges.

Page 40, section 3.2 (industrial gas demand) notes:

“Industrial activities using gas for very high temperature heat and high-pressure steam or as a feedstock are relatively more constrained in being able to respond to rising gas prices. In these industrial processes, gas is either a significant input in the manufacture of the end product or is the preferred fuel for those processes (which might not be the case for fuels with lower energy content or higher cost). Feedstock users typically perform the most gas-intensive production activities and therefore, gas comprises a significant share of input costs.”

Page 41, section 3.2.1 (Major industrial users energy intensity) notes:

“In as much as activities are highly dependent on gas either as a feedstock or for specialised industrial processes, have low per unit margins, or are competing with lower price imports, the ability to absorb higher prices or justify investment in adaptation is significantly constrained.”

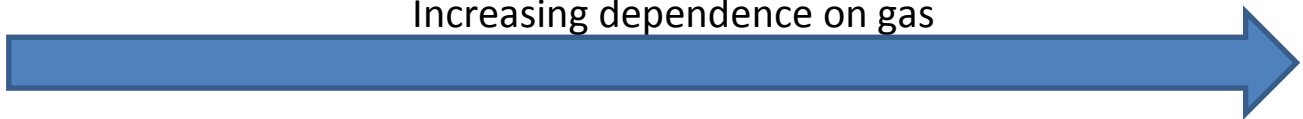
Page 45, section 3.5 (conclusions) notes:

“While the effect of rising gas prices on industry costs and competitiveness should not be understated, this needs to be viewed in the context of a range of factors that impact on the overall competitiveness of manufacturing and industrial gas users. Firms with the highest sensitivity to gas prices are those in trade-exposed, gas-intensive industries. Firms that use gas as a feedstock are particularly vulnerable due to a lack of substitutes.”

The issue of gas dependence and potential for switching, where it exists, is also explained on page 40, figure 3.5:

On-site Electricity Generation and space heating	Heat and Steam raising activities	Feedstock Usage
<ul style="list-style-type: none"> • Various industrial complexes and processes • Hospitals • Large public buildings 	<ul style="list-style-type: none"> • Cement and lime production • Alumina refining • Non-ferrous metals refining • Bricks, tiles and masonry production • Pulp and paper production • Ethanol production • Glass production • Food and beverage production 	<ul style="list-style-type: none"> • Ammonia synthesis • Fertiliser production • Methanol production • Explosives production • Polymer production • Chemical production

Increasing dependence on gas



Increasing potential for fuel switching



The reality then is that gas for chemical feedstock production is non-substitutable and non-switchable.

The important conclusion from these elements is that nearly 10% of Australia’s domestic gas use, or 30% of its industrial use, is consumed for chemical feedstocks that underpin Australia’s agriculture, irrigation, food and packaging, mining, building and construction, healthcare and medical sectors. This gas is non-substitutable as fuel switching is not an option as in electricity and other use categories. You can’t replace gas with coal or other fuels to make chemicals in current plant.

In addition to these critical factors, is the issue of the rapidly changing supply environment from LNG exports and the additional uncertainties created from Australia being the first economy to deliver significant amounts of LNG from Coal Seam Gas. Page 113 (conclusions and next steps) notes:

“The development of LNG export facilities has introduced a significant new dynamic into the Australian domestic gas market. The previous stable and long-term contract market for domestic gas supply in the eastern

market will now be subject to market forces that are determined on the global stage. How the market will respond, and the nature of the transition to a more dynamic market, are not clear – primarily due to the asymmetries of information in an opaque, long-term contract based market and the presence of some new and large risks in the supply-demand balance. This is largely uncharted territory – no country has tried to deliver this many LNG trains from CSG resources in such a short period – so it is not surprising that high levels of uncertainty prevail.”

The Study provides a valuable catalogue of potential new gas market reforms on page 95. By and large, PACIA recognises that these will be valuable in addressing some of the current issues in a market based manner. However the basis for these reforms appear to be calibrated against gas as an energy source. Whilst this is not unreasonable given its majority volume-based use as raw gas, it appears to not take the critical role of chemical feedstocks into full account.

For these reasons, PACIA reiterates that chemical feedstock requirements need to be fully understood and accounted for in policy reform development. Without this specific inclusion it is reasonably foreseeable that there could be unintended consequences for chemical feedstock production and their supply chains from energy calibrated policies. Examples of where unintended consequences have potential include:

- The assumption that Australia has sufficient gas and the underlying issue is one of price where policy reform can assist price discovery.
 - The issue for feedstock users includes access to the available gas as well as its price. Investment justification in new or upgraded plant requires certainty of supply for the life of the plant. Increased supply uncertainty as well as its price will limit investment decisions.
- Supply and price fluctuations during periods of tightness can be responded to by fuel switching. Demand projections include demand reductions from generators using fuel alternates as well as the luxury of peak and off-peak demand. Examples are now evident of electricity generators in Queensland switching from gas back to coal.
 - Chemical plants run continuously and with a very narrow band of supply fluctuation tolerance. A plant cannot effectively be slowed down, it is inherently on or off. Running out of feedstock would create a significant and material impact on a chemical business and the supply chains reliant on them.

Recommendation: The proposed policy reform must specifically take into account the full range of issues and circumstances relating to the significant amount of gas used as chemical feedstock, including its unique needs relating to non-substitution and supply tolerances.

3. Ensuring the policy reform process takes into account previously identified and agreed recommendations.

As noted earlier, the proposed potential new gas market reform principles in table 7.2 and the summary of options for government consideration provide a valuable and structured approach to the reform needed in the changing market. In the main they align well with the issues raised in the PACIA Roadmap and PACIA's October, 2013 submission.

However there are other policy reform considerations dating back to the 2002 Parer report to COAG "*Towards a truly national and efficient energy market,*" which COAG confirmed as valuable, but have not yet been implemented. These include, but are not limited to a review of the Competition and Consumer Act to allow the ACCC to examine joint gas marketing agreements to improve upstream competition and supply.

The Study raises the issue of the role of non-market interventions and specifically if reservation policy and national interest tests should be ruled out. PACIA has noted on several occasions that reservation policy is not the preferred method to rectify the challenges being experienced and that market based processes should be progressed. The extent to which they should be ruled out would need to align with the degree of certainty that the known risks can be fully and effectively managed by market –based mechanisms. The Study reiterates, again on page 113:

"The development of LNG export facilities has introduced a significant new dynamic into the Australian domestic gas market. The previous stable and long-term contract market for domestic gas supply in the eastern market will now be subject to market forces that are determined on the global stage. How the market will respond, and the nature of the transition to a more dynamic market, are not clear – primarily due to the asymmetries of information in an opaque, long-term contract based market and the presence of some new and large risks in the supply-demand balance. This is largely uncharted territory – no country has tried to deliver this many LNG trains from CSG resources in such a short period – so it is not surprising that high levels of uncertainty prevail."

The extent to which market-based mechanisms can address these identified uncertainties to meet the long term policy objectives is not clear at this stage then.

Recommendation: The policy reform agenda to review the 2002 Parer recommendations and COAG agreed actions, as well as other previously agreed actions, to further strengthen the reform agenda.